Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
UPDATE TO PARTS 2 AND 25 CONCERNING NON-GEOSTATIONARY, FIXED-SATELLITE SERVICE SYSTEMS AND RELATED MATTERS	)	IB Docket No. 16-408

SPACE EXPLORATION TECHNOLOGIES CORP.
RESPONSE TO PETITIONS FOR RECONSIDERATION

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INTRODUCTION AND SUMMARY

Space Exploration Technologies Corp. ("SpaceX") hereby opposes petitions for reconsideration of the NGSO Update Order[1] filed by Viasat, Inc. ("Viasat") and WorldVu Satellites Limited ("OneWeb")[2] and supports the petition for reconsideration filed jointly by Iridium Constellation LLC, EchoStar Satellite Operating Corporation/Hughes Network Systems, LLC, and Telesat Canada ("Joint Petitioners").[3]

The Commission should reject OneWeb's opposition to the Commission's default spectrum sharing regime for non-geostationary satellite orbit ("NGSO") systems—a regime that OneWeb actually supported, before it decided to oppose. OneWeb's current position, adopting a simplistic system based on ITU filing date, would encourage abuse, reduce certainty for prospective NGSO operators, and chill investment in the burgeoning NGSO sector that is focused on improving broadband access throughout the U.S. and internationally.

The Commission should likewise reject several requests for reconsideration proffered by Viasat. Viasat argues that the Commission should revisit the equivalent power flux-density ("EPFD") limits to ensure adequate protection for modern geostationary satellite orbit ("GSO") systems. However, its technical analysis depends on antenna patterns that differ significantly from those used to assess EPFD compliance under ITU rules and relies on unrealistic assumptions about NGSO systems. Viasat also contends that, in light of rule changes made in the NGSO Update

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1 *See Update to Parts 2 and 25 Concerning Non-Geostationary, Fixed-Satellite Service Systems and Related Matters*, Report and Order and Further Notice of Proposed Rulemaking, 32 FCC Rcd. 7809 (2017) ("NGSO Update Order").

2 Petition for Reconsideration of Viasat, Inc., IB Docket No. 16-408 (filed Jan. 17, 2018) ("Viasat Petition"); Petition for Reconsideration of WorldVu Satellites Limited, IB Docket No. 16-408 (filed Jan. 17, 2018) ("OneWeb Petition").

3 Petition for Reconsideration of Iridium Constellation LLC, EchoStar Satellite Operating Corporation/Hughes Network Systems, LLC, and Telesat Canada, IB Docket No. 16-408 (filed Jan. 17, 2018) ("Joint Petition").

Order, the Commission should permit major amendments to pending, or already granted, NGSO system applications, within the scope of the ongoing NGSO processing rounds. This proposal, however, is inconsistent with Commission rules and precedent and would effectively restart each NGSO processing round, discarding years of work by applicants and the decidedly brisk Commission work on NGSO licensing and regulatory framework.

Lastly, SpaceX agrees with the Joint Petitioners that the Commission should revise footnote NG62 to the domestic Table of Frequency Allocations to conform its terms to the Commission's intended effect.

DISCUSSION

I. THE COMMISSION PROPERLY REJECTED A DEFAULT NGSO SPECTRUM-SHARING REGIME BASED ON ITU FILING DATE

In 2002-2003, the Commission established initial rules for spectrum sharing among NGSO systems licensed in a processing round. First, all parties were required to coordinate in good faith.[4] When such coordination did not result in an agreement, NGSO systems operating within certain portions of the Ku- and Ka-bands reverted to a default spectrum-sharing mechanism under which each system may operate throughout its authorized band except during "in-line" events.[5] An "in-line" event occurs when satellites of different NGSO systems are physically aligned with an operating earth station of one of those systems, such that the topocentric angle between the satellites is less than 10 degrees. During such events, the affected NGSO operators divide the

4 *See* 47 C.F.R. § 25.261(d) (2016).

5 *See Establishment of Policies and Service Rules for the Non-Geostationary Satellite Orbit, Fixed Satellite Service in the Ku-Band*, Report and Order, 17 FCC Rcd. 7841, 7850-52 ¶¶ 27-38 (2002) ("Ku-band NGSO Sharing Order"); *Establishment of Policies and Service Rules for the Non-Geostationary Satellite Orbit, Fixed Satellite Service in the Ka-Band*, Report and Order, 18 FCC Rcd. 14708, 14714-15 ¶¶ 18-21 (2003) ("Ka-band NGSO Sharing Order").

commonly assigned spectrum equally, in the absence of any other arrangement. The Commission found that this approach would best meet its goals of allowing equal access to the available spectrum, avoiding spectrum warehousing, and encouraging system flexibility to promote spectrum coordination.[6]

In this current NGSO rulemaking proceeding, the Commission proposed to extend this original default spectrum-sharing regime to other bands that are currently being used or proposed for NGSO operations.[7] OneWeb supported the Commission's proposal in its initial comments. Specifically, OneWeb argued that, "[i]n order to facilitate the innovative services and applications proposed by many NGSO constellations," the Commission should apply the avoidance-of-in-line-interference mechanism across all frequency bands in which NGSO FSS systems operate.[8] However, OneWeb proposed that the Commission modify this rule to use a $\Delta T/T$ of 6% rather than a 10 degree separation angle as the trigger for the default sharing rule. With that change, OneWeb concluded that the default spectrum-sharing regime would "provide[] the necessary incentive for operators to coordinate their systems in good faith and also prevent[] a paper-constellation filing from securing spectrum at the expense of real systems."[9]

In the NGSO Update Order, the Commission reaffirmed its conclusion that "coordination among NGSO FSS operators in the first instance offers the best opportunity for efficient spectrum sharing,"[10] and required authorized NGSO operators "to discuss their technical operations in good

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6 *See* Ku-band NGSO Sharing Order ¶¶ 27-38; Ka-band NGSO Sharing Order ¶ 18.

7 *See Update to Parts 2 and 25 Concerning Non-Geostationary, Fixed-Satellite Service Systems and Related Matters*, Notice of Proposed Rulemaking, 31 FCC Rcd. 13651, 13660-61 ¶ 23 (2016).

8 Comments of OneWeb, IB Docket No. 16-408, at 12 (filed Feb. 27, 2017) ("OneWeb Comments").

9 *Id.* at 12-13.

10 NGSO Update Order ¶ 48.

faith with an aim to accommodating both systems."[11] But, in the event that such direct operator-to-operator coordination efforts are not successful, the Commission adopted OneWeb's proposal that NGSO operators be required to split the spectrum with a 6% ΔT/T trigger.[12] In doing so, the Commission considered and rejected several other competing approaches, including one that would have given priority to a single NGSO operator according to the date of receipt of its ITU coordination request.[13]

Now, however, OneWeb has reversed itself. It now requests that the Commission reconsider its decision to adopt the default sharing regime that OneWeb itself originally proposed.[14] It now contends that using a ΔT/T trigger and spectrum splitting in the absence of a coordination agreement would undermine the ability of NGSO operators to design, finance, build, and operate their systems.[15] In place of the regime it suggested, OneWeb argues that the Commission should adopt a default rule simply based on the date of ITU filing. Incredibly, OneWeb contends that the Commission's reasons for adopting its own proposal "do not withstand scrutiny."[16] As the review of the Commission's reasoning below demonstrates, however, it is OneWeb's reasoning—on its second try, that is—that cannot withstand scrutiny.

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11 *Id.*

12 *See id.* ¶ 49.

13 *See id.* ¶¶ 45-50.

14 In fairness, OneWeb did request in its reply comments that "the Commission consider relying on the ITU coordination priority" approach suggested by Telesat and LeoSat. Reply Comments of OneWeb, IB Docket No. 16-408, at 19-20 (filed Apr. 10, 2017). OneWeb did not, however, attempt to square the position it took in its comments with the one it seemed to endorse in its reply comments, and certainly did not discuss a two-stage coordination process like the one proffered in defense of its proposal on reconsideration. *See* OneWeb Petition at 2.

15 *See* OneWeb Petition at 3.

16 *Id.*

A. The ITU Filing Date Approach Results in Uncertainty for Most NGSO Operators.

The Commission rejected a default sharing rule based on ITU filing date for several reasons. The first was that, absent coordination, reliance on ITU date of filing would identify a single applicant that "would be given certainty of operations in wide swaths of spectrum without offering any certainty to a multitude of other proposals in the same bands."[17]

In challenging this conclusion, OneWeb first argues that the Commission's requirement that all applicants engage in good faith coordination negotiations would "prevent operators from making any arbitrary coordination claims."[18] Yet OneWeb's own behavior to date demonstrates that this optimistic assumption may prove unrealistic. For example, OneWeb has insisted that its NGSO system should be afforded a 125 km "buffer zone" separating it from later-filed NGSO systems[19]—even though there is no U.S. or international basis for such a requirement and no operational justification for such enormous orbital separations that would effectively sterilize a large swath of space from further development. OneWeb has even continued to assert this position after the Commission rejected its request to impose such a buffer zone on another NGSO system applicant.[20] Such unreasonable and anti-competitive behavior does not bode well for future coordination discussions.

OneWeb's description of how it envisions coordination based on ITU date of filing further illustrates the problem. OneWeb describes a regime in which satellite Company A submits the

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17 NGSO Update Order ¶ 50.

18 OneWeb Petition at 3.

19 *See, e.g.*, Comments of WorldVu Satellites Limited, IBFS File No. SAT-LOA-20161115-00118, at 11-12 (filed June 26, 2017).

20 *See Telesat Canada*, Memorandum Opinion and Order, 32 FCC Rcd. 9663, 9668 ¶ 12 (2017); Letters from Brian D. Weimer, Counsel to OneWeb, to Marlene H. Dortch, FCC, IBFS File Nos. SAT-LOA-20161115-00118 and SAT-LOA-20170301-00027, at 10 (filed Nov. 17, 2017).

parameters of its proposed NGSO system in a request for coordination filed with the ITU, and satellite Company B thereafter is "free to design around the higher priority system" so that it can operate "in a non-interfering way."[21] To the extent satellite Company B can avoid any scenario in which its proposed operations would cause satellite Company A any interference whatsoever, then Company A's consent is not necessary. This certainly would increase certainty for satellite Company A, but only at the expense of radically narrowing the options and capabilities available to any subsequent operators, like satellite Company B. Moreover, it would perversely encourage Company A to design a system with limited sharing capabilities by assuring Company A that its competitors, not Company A itself, will bear the burden of this inflexibility. Neither outcome is conducive to a competitive NGSO environment that would increase broadband connectivity, and both highlight the failure of this approach to provide the necessary incentives for NGSO operators to utilize spectrum efficiently.

The ITU itself does not equate "ITU priority" with the presumption that the party that files first at the ITU gets to dictate how every other subsequently-filed system has to operate. Under the ITU Radio Regulations, every NGSO system has an obligation to accommodate others, and is expected to coordinate in good faith. The Rule of Procedure on Article 9.6 of the ITU Radio Regulations, applicable to all NGSO systems, makes clear that "the coordination process is a two-way process" and "no administration obtains any particular priority as a result of being the first to start either the advance publication phase . . . or the request for coordination procedure."[22] Yet many operators—apparently including OneWeb—feel that their proposals are sacrosanct and everyone else must work around them. This misconception can result in prolonged and fruitless

[21] OneWeb Petition at 4.

[22] ITU Rules of Procedure, Radio Regulation No. 9.6 § 1(c)-(d) (2017).

negotiations among operators, and may encourage precisely the kind of winner-take-all behavior OneWeb seems to envision, but which the Commission had hoped to avoid.[23] The first-come, first-served approach would also chill subsequent innovation and investment, to the detriment of competition. Even if the relevant administrations would reliably intervene at some point to ensure appropriate cooperation among NGSO operators, so much valuable time may be lost that the window of opportunity for the lower-priority system to develop and deploy may effectively be closed. By defining a certain default spectrum-availability outcome, the Commission's approach creates better incentives for all parties to work together to achieve efficient sharing arrangements that maximize productive use of valuable spectrum resources.

OneWeb also asserts that, under the Commission's regime, NGSO system designers will have no incentive to consider ways to protect earlier proposed NGSO systems.[24] Yet the one point of agreement among virtually every NGSO applicant commenting in this proceeding was that splitting spectrum is the least efficient approach and should be avoided if at all possible.[25] Thus, every NGSO operator has strong incentives to reach a successful coordination arrangement with its NGSO counterparts, rather than implement the default spectrum-sharing mechanism. Moreover, contrary to OneWeb's assertion,[26] the current rule would *not* require applicants to split

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[23] *See* NGSO Update Order ¶ 50.

[24] *See* OneWeb Petition at 6-7.

[25] *See, e.g.*, Comments of The Boeing Company, IB Docket No. 16-408, at 14 (filed Feb. 27, 2017) ("A licensing process that divides scarce spectrum resources between multiple NGSO FSS system licensees would prevent any of those satellite systems from having access to enough spectrum to provide broadband services that satisfy or exceed the Commission's stated goals for broadband throughput (*i.e.*, 25 Mbps down and 3 Mbps up)."); Comments of LeoSat MA, Inc., IB Docket No. 16-408, at 11 (filed Feb. 27, 2017) ("Band-splitting generally is not a desirable assignment method among qualified NGSO FSS applicants because these systems have the potential to share and reuse the same spectrum."); Reply Comments of SES S.A. and O3b Limited, IB Docket No. 16-408, at 20-21 (filed Apr. 10, 2017) ("As many parties recognize, sharing among satellite systems is: (1) possible through coordination; (2) an efficient means of establishing a baseline for handling in-line events; and (3) helps avoid the mishandling of spectrum resources that would occur through band segmentation").

[26] *See* OneWeb Petition at 10.

spectrum with an unknown number of future applicants, whether real or paper systems. The rule makes clear that the obligation to split spectrum only applies only when one *operating* NGSO system causes an increase of more than 6% in the system noise temperature of another *operating* NGSO system.[27] A system that is never deployed for operation will cause no such interference and is not entitled to any spectrum under the current rule.

B. The ITU Filing Date Approach Would Chill Investment.

The Commission's second reason for rejecting the ITU filing-date approach as a default spectrum-sharing solution was that it "could unduly chill investment in competing systems."[28] OneWeb disagrees, contending that "increased certainty for all operators at the planning stages" will result in greater investment in NGSO systems.[29] As discussed above, however, the certainty OneWeb describes is illusory. As conceived by OneWeb, an NGSO system that files first at the ITU could be certain that it could deploy exactly the system it initially proposed, while subsequent systems could be certain only that they might be blocked by an earlier-in-time system, unless they were able to "design around" that system to achieve interference-free operations. If the system with an earlier filing date is composed of hundreds of NGSO satellites operating over a wide array of spectrum bands (like the system proposed by OneWeb), a later-filed NGSO operator intent on avoiding interference would be severely limited in the system it could design. The Commission properly concluded that an NGSO framework with such limitations would be unlikely to attract the investment necessary to achieve deployment of robust competitive satellite systems.

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[27] *See* 47 C.F.R. § 25.261(c). OneWeb understood this concept when it filed its comments. *See* OneWeb Comments at 12 ("absent a coordination agreement, two NGSO systems would have to be operational before any of the operators could request the other to reduce its spectrum usage to less than the full amount authorized").

[28] NGSO Update Order ¶ 50.

[29] OneWeb Petition at 6.

C. The ITU Filing Date Approach Would Delay Competing Systems.

The Commission's third reason for rejecting the ITU filing date default mechanism was that, "[i]f the first priority system is not ultimately deployed, it could delay the provision of NGSO FSS broadband by lower-priority systems fearful of a hypothetical sharing environment."[30] Under the Commission's rules, an NGSO system operator has up to six years before its authorization would become null and void due to failure to deploy.[31] If that NGSO operator is allowed to insist upon a priority position throughout this period, it would place competing NGSO operators in limbo, even as their own deployment milestones approach.

OneWeb does not attempt to address this concern directly. Its only potentially relevant argument relates to the "certainty" that a later-filed system could achieve by engineering completely around the earlier-filed system. As discussed above, such certainty for a single operator is achieved only by substantially narrowing the options for every other operator seeking to provide competing broadband services to U.S. customers. And if the earlier-filed system does not ultimately deploy, all of the spectrum assets it claimed would go unused by the compromised "work around" system that was specifically designed *not* to impinge upon those assets. That is not a trade-off that would serve the public interest, and the Commission rightfully rejected it.

D. The ITU Filing Date Approach Would Not Incentivize Spectrum Sharing.

Lastly, the Commission rejected the ITU filing date proposal because it "gives the highest priority system weaker incentives to accommodate competing NGSO FSS systems."[32] Again, OneWeb's own statements bear out this concern. An operator that thinks all other NGSO systems

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30 NGSO Update Order ¶ 50.

31 *See* 47 C.F.R. §§ 25.161(a)(1), 25.164(b)(1) (pending OMB approval).

32 NGSO Update Order ¶ 50.

must "design around" its system is unlikely to agree to operational changes, even if these changes would lead to enhanced spectrum efficiency across all NGSO systems. Nor does such a presumption lead to incentives to innovate and invest in more spectrally-efficient technology or operational techniques. By contrast, the default sharing solution originally proposed by OneWeb and now adopted by the Commission sets all NGSO applicants in a processing round on an equal footing, which creates proper incentives for cooperative coordination negotiations and spectrum innovation. As a result, the Commission concluded that "more accommodation, more sharing, and ultimately, more competition, will result from treating NGSO FSS applicants equally than by a first-come, first-served regime in a potentially challenging sharing environment."[33] A regime based on ITU filing date alone would undercut these objectives, and the Commission was well justified in rejecting it. There is no reason to reconsider that decision now.

II. ITU EPFD LIMITS WILL PROTECT GSO SYSTEMS

Viasat argues that the Commission must revisit its decision to adopt the ITU EPFD limits in the Ka-band because, it claims, these limits would not adequately protect modern GSO systems. In fact, it goes so far as to claim that the Commission has *acknowledged* that these GSO systems will not be protected.[34] Neither of these assertions is correct. The ITU $EPFD_{up}$ limits are more than sufficient to protect systems like Viasat's—including potential interference from a single NGSO system as well as in the aggregate. Indeed, because Viasat did not propose any alternative $EPFD_{up}$ limit, the ITU limit is the *only* limit with substantial record support. Moreover, nowhere has the Commission indicated that Viasat or other GSO operators will be unprotected. Viasat's claim to the contrary is evidently supported only by an aggressive misreading of the Commission's

[33] *Id.*

[34] Viasat Petition at 3.

unremarkable historical observation that "these limits were not developed with the most advanced modern GSO networks in mind."[35]

Viasat's claims of the inadequacy of the Commission's $EPFD_{up}$ limits are based on a technical analysis that is not only specific to Viasat's satellites, but which also apparently disregards or misapplies the antenna pattern that must be used in calculating compliance with EPFD limits under controlling ITU procedures. According to Viasat, for instance, some of its satellites may experience a data rate reduction of 26% corresponding to signal degradation of 3.5 dB.[36] These predictions evidently apply to Viasat's second-generation satellites which, as described in Viasat's most recent technical attachment, have a G/T ratio as high as approximately 30.8 dB/k. This is consistent with a peak gain of 61 dB and a system temperature of 1050 K. Viasat's April 21, 2016 ex parte appears to confirm these values.[37] For such an antenna, the GSO service area as defined by the relevant ITU recommendation[38] (*i.e.*, the area within the 15 dB gain contour) would include the area within 0.155 degrees from the antenna boresight, or approximately 29,200 km^2 on the Earth's surface.[39]

This is far smaller than the area covered by the ITU reference antenna, meaning it will potentially receive uplink interference from a far smaller number of earth stations at a given time—a critical difference that Viasat's analysis appears to overlook. The service area covered by Viasat's antenna is a mere $1/4000^{th}$ of the area covered by the ITU reference antenna, which, because it is defined to have a lower peak gain and a wider beamwidth, would cover roughly 110

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35 NGSO Update Order ¶ 35.

36 Viasat Petition, Exhibit A at 3.

37 Letter from John P. Janka, Latham & Watkins LLP, to Marlene H. Dortch, FCC, GN Docket No. 14-177, IB Docket Nos. 15-256 and 97-95, WT Docket No. 10-112, RM-11664, Attachment at 1 (filed Apr. 21, 2016).

38 Recommendation ITU-R S.1503-3 § D5.2.5 (2018).

39 These calculations assume a GSO antenna pointed to nadir.

million km^2 on the surface of the Earth.[40] This far smaller area, and correspondingly smaller number of earth stations from which it might receive interference, more than offsets the increased peak gain of Viasat's antenna.

Therefore, Viasat's second-generation satellites will typically receive *less* interference than a satellite employing the ITU's reference antenna pattern. For example, when comparing SpaceX's planned constellation operations, there is likely to be, on average, less than one SpaceX gateway earth station in view of a second-generation Viasat GSO satellite at any given time (*i.e.*, there will typically be zero earth stations in view, and rarely more than one). Given the planned operating parameters of SpaceX's gateway earth stations, worst case interference to a Viasat satellite under the ITU's EPFD limits should not exceed -29.25dB I/N. By contrast, the ITU reference antenna pattern would yield a significantly higher—but still negligible—I/N ratio of -19.5dB, or a mere 1.1% $\Delta T/T$. Clearly, therefore, the ITU $EPFD_{up}$ limits are more than sufficient to protect Viasat's GSO system.

In fact, although the ITU may not have had systems like Viasat's "in mind" when it developed the current EPFD limits, this potential mismatch actually favors Viasat. As the above analysis demonstrates, the ITU EPFD limits are more protective of the new generation of satellites than those the rules were originally intended to protect. Assuming the same distribution and uplink characteristics of potentially-interfering earth-stations, Viasat's satellites should experience 9.75 dB *less* interference than satellites using the reference antenna pattern assumed by the ITU's EPFD rules.

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[40] *See* ITU-R Radio Regulations Table 22-2 (2016); Recommendation ITU-R S.672-4 (1997) (defining applicable antenna pattern).

Viasat's analysis assumes unrealistically high received power for a given satellite, such that a single earth station in the boresight (or with very poor sidelobe rejection of angular separation) would cause harmful interference to a GSO satellite. But that assumption is inconsistent with realistic NGSO operating parameters, which employ large numbers of low-power earth stations, rather than the smaller number of very high-power stations that Viasat's analysis assumes. The Commission's decision to adopt ITU limits therefore properly reflects a set of highly conservative assumptions applied to realistic NGSO operating scenarios.

Viasat similarly exaggerates the interference risk posed by aggregate $EPFD_{up}$. Assuming that *five* separate NGSO systems all operate at ITU $EPFD_{up}$ limits simultaneously—likely to be an extremely rare event—aggregate interference to a GSO satellite using a representative ITU reference antenna would total only -12.5 dB I/N or 5.6% ΔT/T. Even accepting the highly unrealistic assumption that all five systems reach maximum EPFD levels simultaneously with respect to a single satellite, other factors such as atmospheric attenuation will reduce the energy received by a GSO satellite still further. Moreover, aggregate interference to Viasat's satellites is likely to be lower still given that, as explain above, they will receive less interference from a single system than the ITU EPFD limits assume.

Finally, in addition to these protections, Viasat should be reassured by the Commission's explicit direction that NGSO operators comply with existing aggregate EPFD limits, an indication that it will intervene to protect GSO systems "if operators cannot agree among themselves how to ensure the aggregate limits are met."[41] This provides an additional layer of protection for Viasat and other GSO operators in addition to the highly protective EPFD limits.

[41] NGSO Update Order ¶ 35.

III. THE COMMISSION SHOULD ENFORCE ITS EXISTING RULES REGARDING MAJOR AMENDMENTS

Viasat claims that, in light of the Commission's NGSO Update Order, it is "unclear" whether amendments to pending NGSO system applications could be made within the scope of the current processing rounds.[42] But there is no need for additional Commission "clarity" on this point: existing rules already make clear that major modifications to an operator's system application would fall outside of any current processing round. The Commission's NGSO Update Order is largely irrelevant to this analysis.

The Commission's rules relating to major amendment of applications within an ongoing processing round are clear: with a limited number of exceptions not relevant here, once the applicable cut-off date has passed for a processing round, "[a]ny application for an NGSO-like satellite license . . . will be considered to be a newly filed application if it is amended by a major amendment."[43] There is no exception for applicants that wish to take advantage of new Commission rules adopted during the course of their processing round.

Any other conclusion permitting major amendments without consequence would effectively vacate each of the Commission's ongoing NGSO processing rounds, inviting a new wave of modified system applications from the current participants in those rounds. Viasat is hardly the only applicant whose ideal system design has evolved over the course of a lengthy NGSO processing round, and in light of the NGSO Update Order. SpaceX recognizes that NGSO systems require flexibility in their design and deployment to correspond with fluctuations in technology, perceived market, and business plans. It is likely that virtually every participant in the round would be eager to amend its application if it could do so without consequence. Allowing

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[42] Viasat Petition at 9.

[43] 47 C.F.R. § 25.116(c).

such amendments would also disadvantage the significant number of applicants that participated in these same processing rounds, but whose authorizations have already been granted. There is no indication that the Commission intended such a radical consequence when it adopted its NGSO Update Order—without suggesting that current applicants would somehow become exempt from the Commission's processing-round and amendment rules.[44]

Viasat suggests that it would be "perverse" to allow applicants that sought waivers of Commission rules that have now been obviated by its NGSO Update Order to take advantage of that flexibility, without allowing other applicants a chance to amend their applications to match.[45] But Commission precedent explicitly rejects this view. For example, in a previous V-band processing round, the Commission granted "first-in-line" status to Northrup Grumman Space & Mission Systems Corporation ("Northrup Grumman"), the only remaining applicant from a processing round that had opened several years earlier.[46] Northrup Grumman's application depended on a waiver of then-existing restrictions barring GSO systems from operating in an NGSO-designated band. SES Americom argued that it would therefore be unfair to grant Northrup's application and thereby give it priority over other operators that waited for the Commission to change its rules to allow operations in that band. The Commission rejected that logic, observing that "[o]ther potential applicants were free to file substantially complete applications with adequately supported requests for waiver of the Ka-band plan, just as Northrop Grumman did."[47] The same is true here. There is no unfairness when Viasat and every other

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[44] As discussed below, where newly-adopted rules *require* amendments to pending applications, the Commission has so stated and given applicants a specific period within which to amend without losing their status in a processing round or have their applications dismissed as non-conforming. *See* footnote 52, infra.

[45] Viasat Petition at 9.

[46] *Northrop Grumman Space & Mission Systems Corporation*, Order and Authorization, 24 FCC Rcd. 2330 (2009).

[47] *Id.* ¶ 89.

applicant were all equally free to request waivers of the Commission's rules in advance of the NGSO Update Order.

Moreover, Viasat appears to conflate seeking a waiver of Commission rules with simple noncompliance, contrasting those that were allegedly "unwilling or unable to comply with the Commission's rules" with those that "complied with the rules in good faith, as they were required to do."[48] But Viasat's rhetoric notwithstanding, there is nothing illegitimate about an applicant's identifying Commission rules that would impose undue burdens, or would be unnecessary as applied to them, and requesting a waiver pursuant to the Commission's well-established waiver rules.[49]

In fact, Viasat itself requested three waivers of Commission rules in its own application for U.S. market access for its Ka/V-band NGSO system.[50] Put simply, each applicant, including Viasat, applied for the system it hoped to operate, with the knowledge both that an NGSO rulemaking proceeding was underway and that it was free to apply for waivers of Commission rules under appropriate circumstances. The Commission has expended a great deal of effort to process these applications—including the requested waivers—resulting in remarkably rapid progress through multiple complex and overlapping processing rounds. Although some operators may now regret certain aspects of their system applications, that is not a suitable reason for the Commission to abandon much of this work and reopen the ongoing processing rounds to eleventh-hour amendments.

Finally, Commission precedent does not support reopening ongoing processing rounds for amendments to take advantage *of newly liberalized* rules. In an attempt to demonstrate otherwise,

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48 Viasat Petition at 9.

49 *See* 47 C.F.R. § 1.3.

50 Application of Viasat, Inc., IBFS File No. SAT-PDR-20161115-00120, at 23-25 (filed Nov. 15, 2016).

Viasat cites the Commission's 2003 V-Band Order,[51] and a subsequent Public Notice inviting parties to amend their pending applications. But in that case, the Commission had amended its application procedures in a way that would have rendered defective each pending application. In fact, in that instance, the Commission went so far as to *require* parties to amend their applications, warning that "[a]ny application that is not amended will be dismissed as defective because it does not substantially comply with the Commission's rules and regulations."[52] Clearly, a situation where an intervening Commission order rendered pending applications defective and subject to dismissal differs fundamentally from the situation here, where certain applicants merely *wish* to amend their applications to update architectures originally filed simply to capitalize on opportunities presented by new rules.

IV. THE COMMISSION SHOULD REVISE FOOTNOTE NG62 TO CONFORM TO ITS INTENDED EFFECT

The Joint Petitioners seek reconsideration of a narrow aspect of footnote NG62 to the domestic Table of Frequency Allocations. That footnote is intended to address the status of eighteen legacy fixed service stations that predate the Commission's adoption of the Ka-band Plan. Seventeen of these are temporary fixed stations that are authorized to operate in various bands, including the 29.25-29.5 GHz band in which satellite services have been designated as primary.[53]

When it adopted footnote NG62, the Commission stated that it was meant "to permit incumbent fixed service licensees to continue to operate as authorized."[54] However, the footnote

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[51] *Allocation and Designation of Spectrum for Fixed-Satellite Services in the 37.5-38.5 GHz and 48.2-50.2 GHz Frequency Bands et al.*, Second Report and Order, 18 FCC Rcd. 25,428 (2003); Viasat Petition at 10.

[52] *International Bureau Invites Applicants to Amend Pending V-Band Applications*, Public Notice, 19 FCC Rcd. 1531, 1531 ¶ 1 (2004).

[53] *See* Joint Petition at 2-3.

[54] NGSO Update Order ¶ 22.

as actually codified does something quite different: it elevates the fixed service stations by making the satellite earth stations secondary in this band. This erroneous codification could significantly undermine existing and future satellite services in the band.

The Joint Petitioners propose that the Commission either delete NG62 or revise it slightly in order to align the rules with the Commission's stated intent.[55] SpaceX supports those proposals. Either way, the proposed deletion or revision would preserve the status quo under which satellite services operate on a primary basis in the 29.25-29.5 GHz band while fixed services may continue to operate according to the conditions of their licenses—achieving what the Commission thought it was doing.

[55] *See* Joint Petition at 3.

CONCLUSION

The Commission's updated NGSO rules establish a fair and workable framework to promote investment in and deployment of NGSO systems, while protecting GSO and other licensees from harmful interference. Unlike other proposals that would reduce efficiency by discouraging cooperation between licensees, these rules strike a careful balance designed to prevent harmful interference, promote certainty, and encourage operators to work together to maximize the use of NGSO spectrum. With the narrow exception of the wording of Footnote NG62, as described above, petitioners have raised no compelling reason for the Commission to revisit this framework.

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CERTIFICATE OF SERVICE

I hereby certify that, on this 20th day of February, 2018, a copy of the foregoing pleading was served via First Class mail upon:

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